

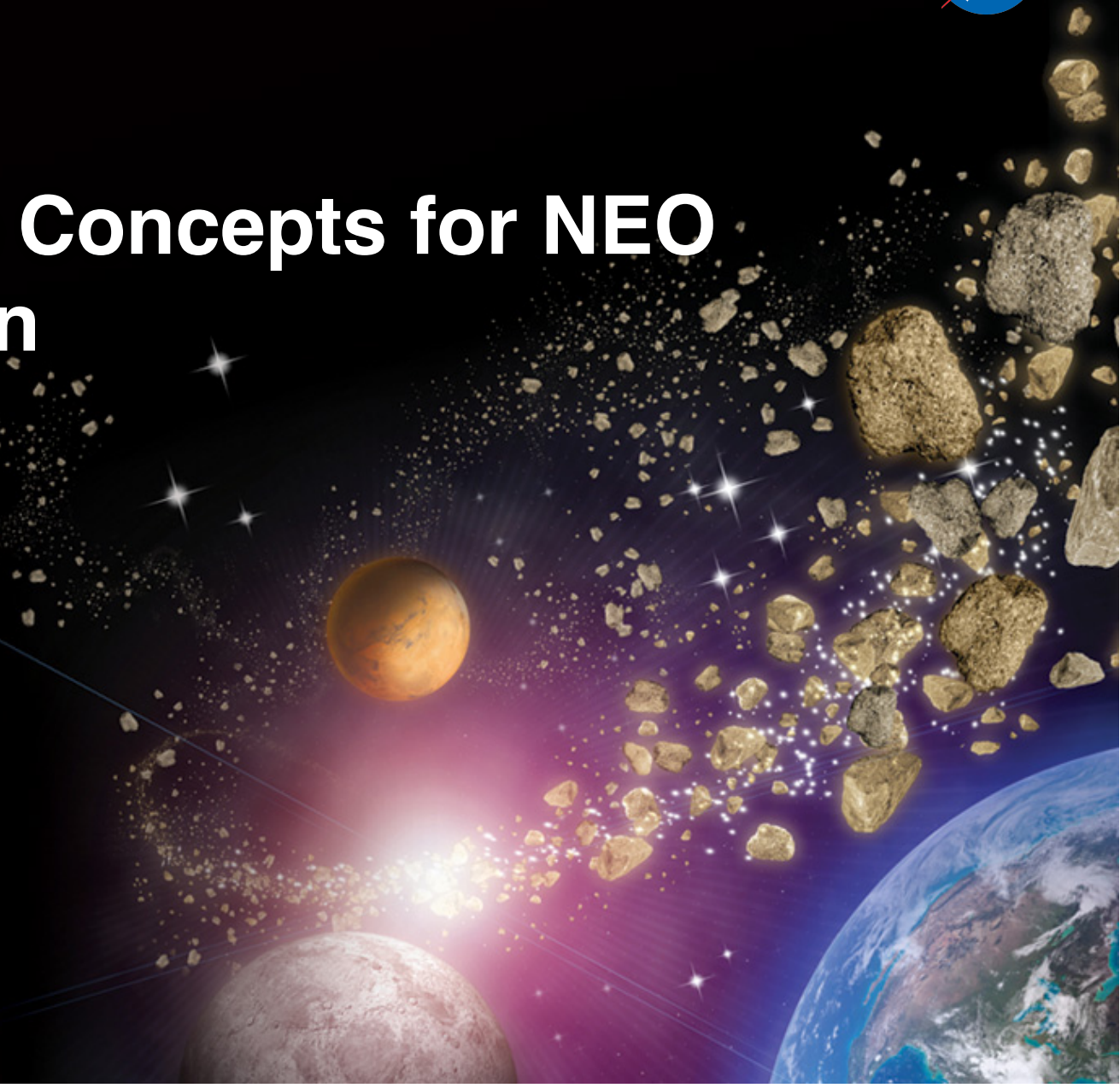
National Aeronautics and Space Administration



Innovative Concepts for NEO Exploration

Brian Wilcox

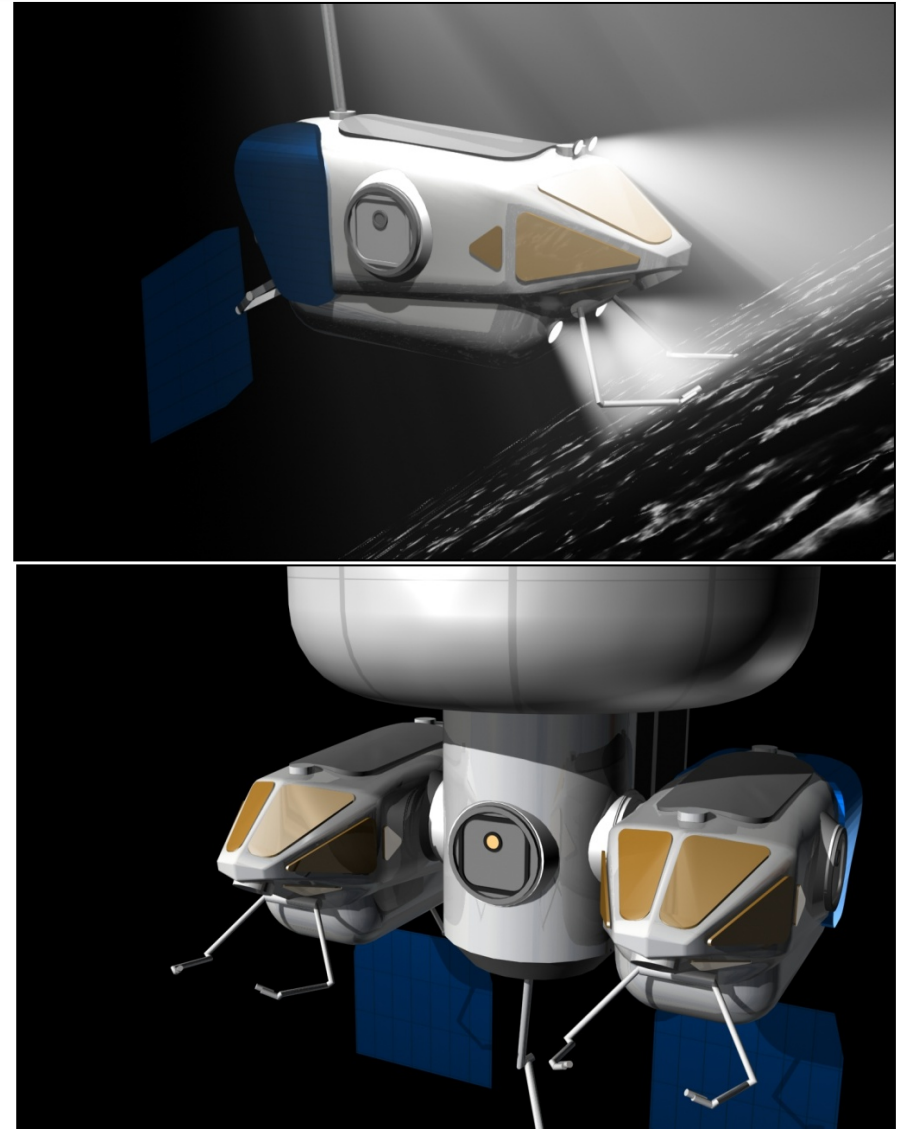
10 August 2010



“Blue Sky” and Near-Earth Object (NEO) Exploration



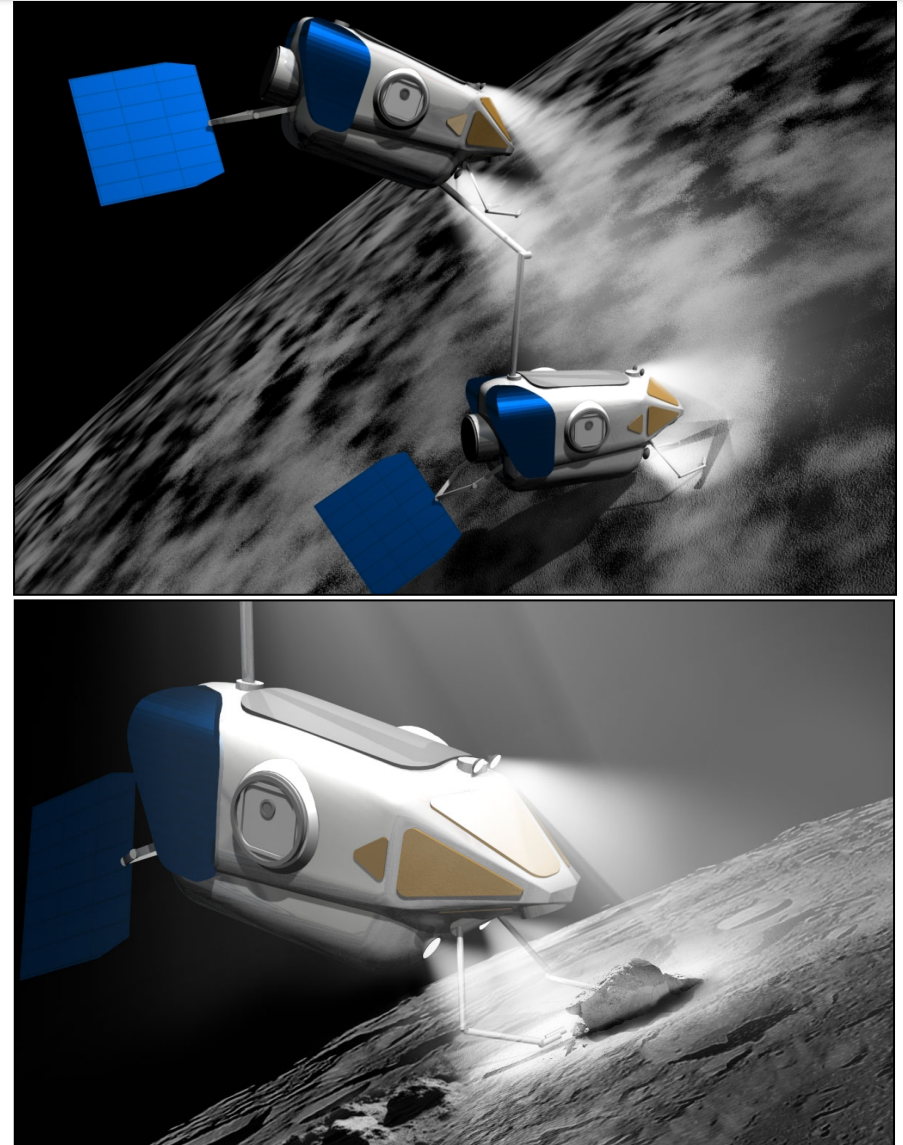
- NEO brainstorming sessions in January and June
- Other brainstorming sessions in recent years developed concept of Space Exploration Vehicle – a small pressurized cabin suitable for 2 astronauts (4 in an emergency)
- Uses water phase-change shield for thermal control and solar particle event (SPE) protection.
- Suitports in a “cabana” for rapid extravehicular activity (EVA) egress/ingress.



NEO Exploration



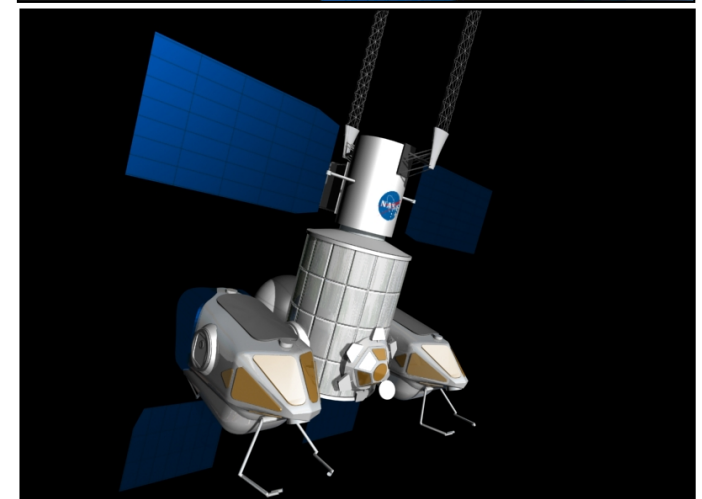
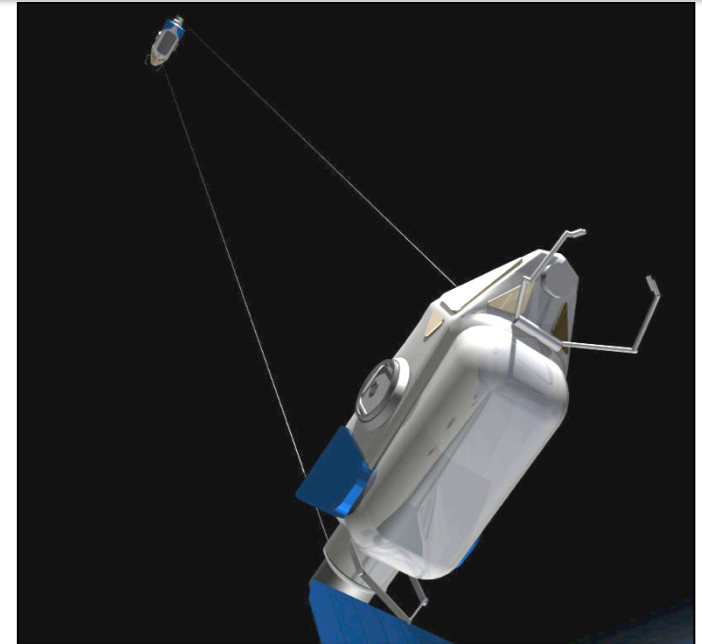
- Connect two Space Exploration Vehicles (SEVs) with RMS-type arm.
- One vehicle can approach surface without using RCS jets that would disturb regolith.
- Other vehicle stabilizes system center-of-mass.



Artificial Gravity



- Centrifuge to get partial or full Earth gravity.
- Debate in community whether exercise and vitamins are enough to prevent bone and muscle loss.
- Could be used during cruise to completely avoid such tissue loss.
- Use of International Space Station (ISS) Node-3 as living space to attach SEVs.



Use of Inflatables



- Inflatables offer large living volumes using existing launch shrouds.
- Added to ISS Node-3 one could have the needed infrastructure for docking plus adequate volume for deep space cruise.

